East Anglia Library
U.G.
633
.A43

AIR CORPS

JAN 11 1941

News Letter

VOL. XXIV JANUARY 1, 1941 NO. 1

VOL. XXIV AIR CORPS NEWS LETTER NO. 1.
Intelligence Division Munitions Building
Air Corps January 1, 1941 Washington, D.C.

The chief purpose of this publication is to distribute information on aeronautics to the flying personnel in the Regular Army, Reserve Corps, National Guard, and others connected with aviation.

---oOo---

GREETINGS FROM THE CHIEF OF THE AIR CORPS

It gives me great pleasure to extend to every officer, enlisted man and civilian employee in the Air Corps my earnest wishes for their health, happiness and success in the New Year.

The past year has seen many marked changes and innovations in our branch of the service. Events across the Atlantic have brought home to the people of our nation the absolute necessity of adequate preparedness on all possible fronts - man power, military equipment and military bases from which to operate for the proper protection of our shores. Our military expansion program has been launched, but it will require the whole-hearted, energetic and utmost devotion of every loyal American citizen to speed this program to a successful conclusion.

Each passing day has emphasized the potency of adequate air power. We have witnessed the havoc the air arm has wrought, with consequent desolation and ruin to cities and countless casualties to noncombatants. We have been bystanders of a mode of warfare by aggressor nations where the air arm was utilized as the spearhead of attack upon one small country after another with invariably successful results. Along with this type of warfare upon civilian populations, we have seen the Air Force of Britain valiantly warding off invasion of its shores.

We have gained many valuable lessons from the air operations of the warring nations, lessons which have made it necessary for us to modify and modernize our equipment in order to stay at the forefront of development in the matter of combat weapons. I feel confident that the traditional American ingenuity, coupled with the iniative, industrious and energetic spirit characteristic of our people, will keep us at the head of the parade of progress.

Gratifying progress has been made by the Air Corps in the training of new pilots and of enlisted men whose duty it is to keep the airplane in the air. Many new Air Corps units have been formed, and this places a heavy burden on our pilot and mechanics schools in order to turn out the required number of trained men to fill their ranks. Many new air bases have also been established, and the coming year will call for a tremendous amount of effort to complete their construction so as adequately to house these new units.

In closing, may I express my sincere appreciation and commendation for your efforts in the past. I feel sure that in your loyalty and devotion to our beloved country you will redouble your efforts in this new year to insure for it a scale of defense which will prove adequate in all respects.

H. H. ARNOLD,
Major General, Air Corps,
Chief of the Air Corps.

CANTONMENT CITY AT HAMILTON FIELD

Construction of the sixty wooden buildings at the Hamilton Field Army air base is rapidly nearing completion, according to an announcement by Captain J.H. Beal, Construction Quartermaster, and the barracks are expected to be ready for occupancy by January 15th. Included in the program are 22 barracks, each providing living facilities for 63 men; 3 hospital barracks, 4 administration buildings, 6 recreation rooms, a schoolhouse, post exchange, 5 mess halls, 5 officers' quarters, storerooms, and an officers' mess.

A feature of the construction is the use of California redwood for frames and Ponderosa rustic pine for sidings, due to a lack of the normally utilized Douglas fir in this vicinity.

A forced hot air heating system, fed by a central heating plant in each building, provides comfortable warmth whenever required. There are complete modern shower and toilet facilities in each barracks.

Great attention has been given to fire prevention, both in regard to location and spacing of the building and in the construction itself. A fire shield of 24 gauge galvanized iron sheets, combined with asbestos board, lines each wall. Termite shields have also been placed between all structural framing and foundation walls. All roofs will be of asphalt.

An average of 200 civilian carpenters a day has been working on the project, and the total estimated cost is $343,000.

The new installations, being built in the area south of the permanent base, will provide living, administrative and training facilities for 15,000 men, thus increasing the present strength of the garrison by approximately 50 percent. This increase is required not only to bring the tactical Pursuit organizations up to full strength but also to man the various echelons of the 10th Pursuit Wing, headquarters of which have been established at the Marin County Base.

---oOo---

LOWRY FIELD ACTIVATES SIX NEW SQUADRONS

Activation of six new squadrons at Lowry Field, Denver, Colo., each with a strength of 200 men, was ordered on December 3, 1940, by the War Department. The new organizations are to be designated the 22nd, 23rd, 24th, 25th, 41st and 42nd School Squadrons. Cadres of enlisted men upon which to build and administer the new squadrons are being organized at once.

This expansion completes activation of the remaining Air Corps units under the 54 Group Program and affects the majority of the Air Corps stations throughout the United States.

The addition of the new squadrons at Lowry Field is resulting in certain organization changes for administrative purposes and the reorganization of the existing and new squadrons into four groups. They are the First Provisional Group, or operating group; the Second Provisional Group and the Third Provisional Group, or the two school groups; and the 21st Air Base Group (Special), or the administrative group. There are now stationed at Lowry Field 16 squadrons, plus attached Medical, Quartermaster, Signal Corps, Finance and Lowry Field headquarters detachments and the 346th Ordnance (Aviation) Company.

The four Groups are to be commanded, respectively, by Majors Leo H. Dawson, Roscoe C. Wriston, Roy W. Camblin and Captain Donald B. Smith, Air Corps, according to a recent announcement by Lieut. Colonel Early E.W. Duncan, Commanding Officer of Lowry Field. A general shakeup of commands and assignments necessarily will follow because of the expansion.

---oOo---

NEW OFFICERS OF AIR RESERVE ASSOCIATION

A recent announcement by the Air Reserve Association gives the names of the newly elected officers to guide the destinies of that organization for the year 1941, as follows:

National President: Major William L. Plummer, 901 William Oliver Building, Atlanta, Ga.
Senior Vice President: Lieut. Colonel Joseph H. Marriott, 1508 4th Street, Santa Monica, Calif.
Second Vice President: Captain T.Q. Graff, Patterson Field, Fairfield, Ohio.
Secretary: Captain H.M. Cronk, Wright Field, Dayton, Ohio.
Treasurer: Captain W. Donald Walter, 515 East Broad Street, Columbus, Ohio.
Judge Advocate: 1st Lieut. Louis M. Gregory, Barksdale Field, Shreveport, La.

---oOo---

Brig. General Rush B. Lincoln recently conducted his first inspection of West Coast Air Corps technical schools, when he spent two days at the Curtiss-Wright Technical Institute, Glendale, Calif., where 600 enlisted men are being trained as future Air Corps mechanics.

TRANSFER OF AIR CORPS UNITS

An announcement by the War Department under date of December 18, 1940, was to the effect that the 36th Pursuit Group (Interceptor) is being transferred from Langley Field, Va., to Puerto Rico for permanent station, and that the 90th and 92nd Air Corps School Squadrons are being transferred from Selma, Ala., to Barksdale Field, La., for temporary duty.

The 36th Pursuit Group (less the Air Echelon) was scheduled to move by motor and marching to Newport News, Va., at such time as to enable the unit to sail on the U.S. Transport CHATEAU THIERRY leaving Newport News, on or about January 2, 1941. The Air Echelon, 36th Pursuit Group, will leave Langley Field so as to arrive in Puerto Rico not earlier than January 7, 1941.

The 90th and 92nd School Squadrons are being transferred as soon as practicable to Barksdale Field, La., for the purpose of obtaining training on Pursuit type aircraft. Upon the completion of this training, about May 1, 1941, these Squadrons will return to their permanent station at Selma, Ala. Movement is to be accomplished by motor.

The War Department made a recent announcement to the effect that the 80th and 81st School Squadrons and the 68th Air Base Group (Special) will be permanently transferred from Moffett Field, Calif., to Stockton, Calif., as soon as practicable.

The three units have a total strength of about 1,000 officers, student flyers and enlisted men. Movement will be by rail and motor.

The field at Stockton is a branch of Moffett Field. Student flyers in the school squadrons will be given additional flying instruction at Stockton.

In a War Department announcement under date of December 31, 1940, it was stated that on or about January 6, 1941, the following Air Corps units, totaling approximately 650 officers and men, will be transferred from McChord Field, Washington, to Fort George Wright, Spokane, Washington, for permanent change of station:

Headquarters and Headquarters Squadron, Northwest Air District.
Headquarters and Headquarters Squadron, 5th Bombardment Wing
310th Signal Aviation Company
314th Signal Aviation Company

Movement will be made by motor and rail, motor vehicles traveling in convoy and camping overnight on Army reservations wherever practicable. Officers and enlisted men who are not required to accompany troops by rail or motor convoy may travel by privately owned motor vehicle.

---oOo---

EXPANSION OF CAL-AERO ACADEMY

The expansion of Cal-Aero Academy's primary training center at Ontario, Calif., to triple its original size has been launched by Major C.C. Moseley, owner of the big field which was created last August for the exclusive purpose of training Army Air Corps Flying Cadets.

New facilities, which will be completed by late January, include ten new barracks buildings, two new hangars, a million more square feet of paved runway, an overhaul building, and miscellaneous smaller structures. When completed, the huge plant will be able to accommodate 672 Cadets and 526 Cal-Aero employees. The cost of the additional structures is estimated at $400,000.

A total of 231 new Flying Cadets, by far the largest class yet to be sent to the Cal-Aero Academy for primary training, comprise Class 41-E at its three fields in California.

Of the above total, 145 men were assigned to the new model training center at Ontario, 49 to Oxnard and 37 to Glendale.

---oOo---

GUNNERY RANGE FOR BOLLING FIELD

Bolling Field, D.C., recently acquired an aerial gunnery range, situated north of Rheoboth Beach, Delaware, on Cape Henlopen. The de-commissioned U.S. Coast Guard Station at Cape Henlopen was loaned to Bolling Field by the U.S. Coast Guard, and the surrounding area was loaned by the State of Delaware.

The gunnery range at present is for the use of the Bolling Field officers and is under the supervision of the Post Operations Officer. Master Sergeant A.H. Holtzman is in charge of the maintenance of equipment. Four men are at present detailed from Bolling Field as caretakers. The former Coast Guard Station is being used for quarters.

The Bolling Field officers have received considerable gunnery practice since this range has been made available.

---oOo---

V-8680, A.C.

THE EXPANSION OF SCOTT FIELD
By the News Letter Correspondent

On the Looking-Glass prairie of Southern Illinois a new kind of a city is being built. It is a city of comparative permanence for a multitude of transients. Within its gates is quartered the Radio Communications School of the Army Air Corps, an enormous feeder of the rapidly expanding Air Corps.

Years ago, Charles Dickens, the English novelist, visited the Looking-Glass country, so named because of its flatness, heard something of the richness of its Indian lore, and wrote his impressions in his American notes. None then, of course, could have divined the future mission of the prairie; none could have foreseen the critical hour making necessary the building of cities such as this.

At dawn the mists lay over the field, and the land 'round about seemed actually to have been changed but little since those days now driven deep into the past. But when the softening fog lifts and the men in uniform hasten in military patterns to their duties, and the tools of hundreds of workmen beat out a symphony, nothing remains of the old but illusions and nostalgia.

You ride over the field one day and have difficulty making passage from one place to another in the areas of new construction; you return the next day and observe to your amazement that a road between those points has been completed.

You visit the expanding precints and are told that every day two new barracks buildings are added to this community of wood and metal, of technology and disciplined man power. The smell of lumber and soil and sweat is in the air. Heavy trucks bog down in sticky top dirt, lurch free and are driven away successfully despite other obstacles. So rapidly does this city grow. So scornful of impediment is the effort toward total preparedness.

Shortly after the first of the year, Scott Field will have 10,000 men or more, and the cantonments for the 5,000 newcomers must be ready by that time.

Barracks, mess halls, school buildings, theaters, service clubs.

Men, instruments, parachutes, airplanes.

If the government's ambitious plans are realized, the Air Corps will be three times as large as the entire present standing Army. That will mean 600,000 men for 50,000 planes, for behind every plane are two pilots and 10 enlisted men.

Scott Field's function is one of the most vital in the service, but the character of its performance is new. Before and during the first World War, Scott Field was a base for lighter-than-air craft, and it was to have been the General Headquarters for the Air Corps. The nature of the reservation changed gradually in the past seven or eight years, the complete alteration taking place when the National Defense program was inaugurated a year and a half ago. At that time $11,000,000 was authorized for a reconstruction program at Scott Field, now becoming the Radio Communications training center. The old buildings of the World War days were to be torn down and to be replaced by permanent quarters and, in addition, the program called for the construction of a new hangar and officers' quarters. For barracks alone, $1,500,000 has been spent. For a mess hall which will seat 6,000 men, $209,000 has been allocated; a heating unit for this building, which officers say will be the largest of its kind in the Army, is costing another $50,000.

The expansion schedules required additional land; therefore, the reservation spread still further into the Looking-Glass prairies. Nearly 4,000 men are engaged in carrying out the reconstruction and enlargement program, and some 1,500 workers in private industry are employed on the new cantonment project, while 2,200 W.P.A. men are used on foundation, road, and landscaping work. The W.P.A. crews are from Madison and St. Clair counties and come to Scott Field by various means of transportation, one group traveling back and forth daily in a hearse.

It is a motley sight, the curious contrasting vehicles of the W.P.A. workers; the lumbering trucks and the government's neat olive drab cars; the array of automobiles, bearing licenses from most of the States, owned by officers and enlisted men at the post.

It is the strange, almost fantastic, new destiny of the Looking-Glass prairie.

---oOo---

The 25th Bombardment Group, which recently arrived in Puerto Rico, flew a formation for Major General Frank M. Andrews, who was aboard the Transport AMERICAN LEGION as it arrived off San Juan. General Andrews conducted an inspection of Borinquen Field prior to leaving aboard the transport for a tour of duty in Panama.

V-8680, A.C.

INSURANCE

By Waddell F. Smith

The December 15, 1940, issue of the News Letter published rates and facts about the new National Service Life Insurance which is now obtainable by those in the service or who subsequently enter the service. This is a reminder that a time limit of 120 days has been imposed, after which application for the insurance will not be considered. As the Act was signed by the President on October 8, 1940, then the time limit for those who were in the service on October 8, 1940, will expire on February 8, 1941. Those who entered the service since October 8, 1940, or who may enter subsequently, will have 120 days from date of entry within which to apply. This insurance is written at absolute cost by the Government, as the entire overhead is assumed by the Veterans Administration. Also, the Act which authorized the insurance provided for the creation of a separate fund out of which all claims will be paid when such claims can be traced to the extra hazards of the service.

No extra premiums are charged to cover the extra hazard of aviation. The Office of the Chief of the Air Corps is very desirous that everyone in the Air Corps, Reserves on active duty and aviation trainees shall have this insurance. This information should be thoroughly disseminated to all individuals now on foreign service, and any applications which are postmarked within the 120 days will be acted on. Any individuals who may buy this insurance may be assured that when they return to civil life they may continue their insurance, and the premiums they pay will not be used to pay any claims arising from the extra hazards of the service.

The unusual value of this insurance should be instantly appreciated, as the policies cover death from any cause, peace time or war time, in or out of service. Many individuals have for many years regretted not having had the old U.S. Government Insurance. They now can buy this new National Service Insurance. The time limit of 120 days is positive, and no exceptions can be made, and so it is urged that all post commanders and organization commanders continue to stress the value of this insurance to the officers and men of their command.

Many of the war-time officers have 20-year endowment policies written soon after the war, and which will soon be maturing for their face value. When this money is received from the Veterans Administration it must be reported as income for tax purposes, but the amount so received is exempt from tax. A test case was ruled on, and it established its nontaxability. For reference, this case may be found in the Internal Revenue Bulletins and is known as I.T. - 3924, Bulletin 1939-2, page 151. This is an interpretation of a case under Section 3, Act of 1935. Any Internal Revenue agent will be able to find this ruling, and it should be cited in making out Federal income tax reports.

This paragraph is to call to the attention of holders of U.S. Government Insurance policies (not the new National Service Insurance) that they have the right to add a special disability clause to their policies by making application, passing satisfactory physical examination and paying the extra premiums required. Application may be made at any time to the Veterans Administration, but it should not be delayed. The velue of this additional protection is considerably in excess of the premiums charged.

Any disability arising from aircraft accident or from war service is fully covered, in addition to disabilities from health causes or accidents. In general, its provisions are waiver of all future premiums on the policy and payment of $5.75 per month per $1,000 of insurance without dissipating any of the principal of the policy, this upon proof of disability from any cause which is total and exists for 120 days or more.

One need not be retired from service to collect this disability, as cases are on record where disability payments have been made during disability without the individual having been retired. However, just the fact that an officer is retired from service does not mean that he will automatically qualify for this disability benefit. It is possible for individuals to be retired with disabilities which are insufficient to qualify, even though they may be of such a nature that they may last more than 120 days. The disability clause is of great value and should be had by all holders of U.S. Government Insurance policies. Full information, rates and application forms may be had by addressing an inquiry to the Veterans Administration, Washington, D.C., or any of its branches. Most supply rooms at army posts have these forms in stock.

V-8680, A.C.

CHANGING AN ENGINE IN NOTHING FLAT
By the Kelly Field Correspondent

During the past six months it has been the custom for engine change crews of various Air Corps fields to claw and fight each other with every type of literature available. Our crew is right in the middle of all this turmoil, and so far as records go we still lead the pack. This all started a few months back when Mitchel Field crew changed an engine in what they claimed to be a record time of 3:25. After reading the articles printed about this change, our crew decided that Mitchel Field didn't have anything on them, except a few more experienced men. So, one hot, sultry, summer day they decided to set up an example of how an engine change should be made in the shortest time possible. This they did in the unusual time of 2:45.

This only tended to throw more kindling on the fire, resulting in a feud that would make A. & M. College and Texas University look for the nearest exit. Two or three times in the last three months, the 61st Squadron Engine Change Crew had to go into high gear to hold the prestige of being the fastest crew in the country, but each time have emerged with a smile on their faces, signifying that they had knocked off a few minutes from the time set by some other organization.

Now comes the climax of what we believe to be one of the most bitter feuds known to this country, - a feud not fought with guns, but with wrenches and hard labor. This climax arrived when an article was printed in the San Antonio EXPRESS this past week about a crew at Randolph Field changing an engine in 1:25. After reading the article, our crew could only blink their eyes and whistle for, indeed, this was truly a remarkable feat. But each resolved that this was no time to admit defeat. At least, there would be no harm in trying to hold their title.

Monday, December 9, 1940, with the assurance of the Engineering Officer that he would be waiting to test the plane the moment the change was completed, they fell to work. One hour and twenty minutes later, to the surprise of all who had been watching the deftness and teamwork of this crew, saw the plane take off on its routine test flight, with the new motor firmly in place and ready for many hours of flying. The crew, who had predicted they could make the change in :50, was slightly disappointed, due to the fact that it took them so long to change such a little thing as a motor in a BC-1 airplane, but, having one of their more experienced men absent, they were satisfied over having knocked :05 off the time set by the Randolph Field crew.

This record may not hold up for long, but they will just sit back and wait for someone to say they have changed one in a shorter time. The only thing that has them stumped now is just how long it will be before they have to change an engine while the plane is in flight. If many more minutes are knocked off the present record, this will have to be done, and so to cope with this problem we have just ordered a large supply of helium.

The crew changing this engine consisted of one Staff Sergeant, two Sergeants and two Privates, only one of them having more than one year's experience in engine change work. The members of this crew do not know their own speed, but some day, if the present pace keeps up, with a snap of their fingers the old motor will be out of the plane and the new one in place.

After all, they still call Kelly Field THE AIR CORPS ADVANCED FLYING SCHOOL, so naturally we have to keep our little brother Randolph in its place, and we are sure that none of our officers will have to eat any part of a plane to get a motor change in short order. The 61st Engine Change Crew is, and will be CHAMPS for some time to come.

---oOo---

COLONEL EAKER JOINS 20TH PURSUIT GROUP

During December, Hamilton Field, Calif., added to its roster an Air Corps officer well known throughout the service when Lieut. Colonel Ira C. Eaker reported for duty from the Office of the Chief of the Air Corps where he had served as Executive Officer.

Colonel Eaker, who had been in the Air Corps since 1917, is best known as the pilot of the famous airplane "Question Mark," which established a world's record refueling endurance flight in 1929. He was a member of the group of Air Corps pilots who participated in the "Good-Will" flight to South America in 1927, and he made the first transcontinental "blind" flight in 1936. He is co-author with General Arnold of two books on flying - "This Flying Game" and "Winged Warfare," and is the holder of the Distinguished Flying Cross with Oak Leaf Cluster. Colonel Eaker's present assignment is with the 20th Pursuit Group (Fighter).

Bowman Field, Louisville, Ky.

Under date of December 27, 1940, the War Department announced that it has authorized the construction of an Air Corps shop hangar at Bowman Field, Louisville, Ky., costing $120,000. Construction projects totaling $1,178,150 are now under way at this field.

The selection of Bowman Field as an Air Corps station was announced by the War Department on October 4, 1940. When present construction activities, which include temporary housing and other facilities, are completed, the 16th Bombardment Wing Headquarters, the 46th Bombardment Group (Light) and the 28th Air Base Group will be stationed there.

Randolph Field, Texas.

Construction was begun on December 10th by the Constructing Quartermaster, San Antonio, Texas, and vicinity, of a Compass Swinging Base at the southwest corner of the building area, Randolph Field, Texas, at an approximate cost of $6,000. Under the new system, whereby basic training only is given at this field, the installation of the Base now under construction will obviate the necessity of taxying all airplanes from the west side of the field to the southeast corner in order to make the necessary compass adjustments.

An extensive surveying and mapping project, sponsored by the Air Corps Training Center and financed by a W.P.A. grant of $45,000 and sponsor's contribution of $14,000, is in progress at the four air fields in the San Antonio area. The project was started on October 15th, and entails the making of cadastral and topographic maps of Kelly, Randolph, Duncan and Brooks Fields, same being scheduled to be completed in ten months. Maps are to be drawn on coordinate grid system to scales of one inch equals forty feet and one inch equals 400 feet. Contours are to be shown in certain areas to a one foot contour interval. All sewer, gas, water and other utility lines are to be shown.

In addition to the mapping program, the floor plans of existing buildings and structures are being redrawn to show additions as made. The structural history of all buildings is being checked and brought up to date. About 90 men - surveyors, draftsmen, researchers, etc., are employed.

Mobile, Alabama

Additional construction costing $294,341, at the Southeast Air Depot, Mobile, Ala., was authorized by the War Department on December 20, 1940. A total of more than $4,250,000 has now been announced for construction at this establishment.

Units to occupy the new facilities will include the Air Depot Headquarters, the 63rd Transport Group, comprising Headquarters and Headquarters Squadron, and the 6th and 9th Transport Squadrons, and necessary service troops. About 1,000 officers and men will be stationed at the depot.

Among the additional facilities to be built are 7 enlisted men's barracks, two day rooms, one officers' mess, one cafeteria-type enlisted men's mess, one bachelor officers' quarters, two supply rooms (organization), one hospital, one warehouse and one theater.

Contracts totaling $4,075,000 for construction of repair shops, supply buildings, officers' quarters, hangars and other facilities at the Southeast Air Depot have been let during the last four months by the War Department.

BOISE - CHARLOTTE - BANGOR - TUCSON

A recent War Department announcement is to the effect that authority had been granted for the construction of temporary buildings and other facilities for Air Corps installations at Boise, Idaho; Charlotte, N.C.; Bangor, Maine, and Tucson, Arizona.

The cost of the projects at these localities is as follows: Boise, $1,393,700; Charlotte, $1,235,800; Bangor, $1,683,387, and Tucson, $1,386,212.

Air Corps units to be stationed at the locations above mentioned are as follows:

Boise, Idaho (Municipal Airport):

42nd Bombardment (M) Group Headquarters and Headquarters Squadron
75th, 76th and 77th (M) Squadrons,
16th Reconnaissance Squadron,
39th Air Base Group, and weather, communication and other aviation personnel, together with necessary service troops. About 2,500 officers and men will be located at this post.

Charlotte, N.C.(Municipal Airport):

56th Pursuit (I) Group Headquarters and Headquarters Squadron,
61st, 62nd and 63rd Pursuit (I) Squadrons,
29th Air Base Group, and weather, communication, and other aviation personnel, and necessary Quartermaster, Signal, Ordnance, Medical, Chemical Warfare Service and other special troops.

The garrison at this post will include more than 1,800 officers and men.

Bangor, Me., Municipal Airport:

43rd Bombardment (H) Group Headquarters and Headquarters Squadron,
63rd, 64th and 65th Bombardment Squadrons,
13th Reconnaissance Squadron,
8th Air Base Group, and weather, communication and other aviation personnel together with necessary special troops.

The garrison will be composed of about 2,400 officers and men.

Tucson, Arizona (Municipal Airport):

1st Bombardment Wing headquarters and Headquarters Squadron,
41st Bombardment (M) Group Headquarters Headquarters Squadron,
46th, 47th and 48th Bombardment Squadrons,
6th Reconnaissance Squadron,
31st Air Base Group, and weather, communication and other aviation personnel, and necessary special troops.

More than 2,800 officers and men will comprise the garrison.

Construction contemplated at the Airports above mentioned is set forth below, as follows:

Boise, Idaho

36 enlisted men's barracks, 9 day rooms, 7 buildings for bachelor officers' quarters, 6 enlisted men's mess buildings, 2 officers' mess buildings, 7 administration buildings, 9 supply r rooms (organization), 2 Q.M. Warehouses, 6 operations buildings, 5 storage buildings, 11 magazines, one each fire station, guard house, hospital, infirmary, Flight Surgeon's Unit, post exchange, QM gasoline storage facility, QM motor repair shop, recreation building, telephone building, theatre, AC gasoline and oil storage facility, Link Trainer building, parachute building, school building, AC shop (hangar), radio station building, control tower, AC warehouse, Ordnance and Signal warehouse and necessary utilities.

Charlotte, N.C.

28 enlisted men's barracks, 7 day rooms, 5 enlisted men's mess buildings, 5 buildings for bachelor officers' quarters, 7 supply rooms (organization), 6 administration buildings, 2 QM warehouses, 5 operations buildings, 4 magazines, 2 warehouses, one each officers' mess building, fire station, guard house, hospital, infirmary, post exchange, QM gasoline storage, QM motor repair shop, QM utility shop, recreation building, telephone building, theatre, AC gasoline and oil storage, Link Trainer building, parachute building, school building, AC shop (hangar), radio station, AC motor repair shop and necessary utilities.

Bangor, Maine

36 enlisted men's barracks, 9 day rooms, 6 enlisted men's mess buildings, 5 buildings for bachelor officers' quarters, 7 administration buildings, 9 supply rooms (organization), 2 QM warehouses, 6 operations buildings, 5 storage buildings, one each officers' mess building, fire station, guard house, hospotal, infirmary, Flight Surgeon's Unit, Post Exchange, QM gasoline storage, QM motor repair shop, recreation building, telephone and telegraph building, theatre, AC gasoline and oil storage building, Link Trainer building, parachute building, school building, AC shop (hangar), radio station building, control tower, and necessary utilities.

Tucson, Arizona

41 enlisted men's barracks, 10 day rooms, 8 enlisted men's mess buildings, 7 buildings for bachelor officers' quarters, 2 officers' mess buildings, 10 supply rooms (organization), 9 administration buildings, 2 QM warehouses, 6 operations buildings, 5 storage buildings, one each fire station, guard house, hospital, infirmary, post exchange, QM gasoline storage, QM motor repair shop, QM utility shop, recreation building, telephone and telegraph building, theatre, AC gasoline and oil storage, Link Trainer building, parachute building, school building, AC shop (hangar), Ordnance and Signal warehouse, motor repair shop, night lighting, sewage disposal and other necessary utilities.

---oOo---

"COMING BACK FAST"

After several months of "Sweating," Staff Sergeant Jordan J. Lee, Chief Operator of Post Communications at Randolph Field, Texas, tucked his Discharge into an overloaded suitcase and "took off" for a Civil Service job with the C. A. A. He was to report at Anton Chico, New Mexico, for duty, but shortly after leaving, orders came changing his assignment to Sulphur Springs, Texas. After some difficulty, he was contacted and put upon the proper course.

Several days later, the following telegram was received from "Mr." J. J. Lee:

"ROOM AND BOARD $40.00, LAUNDRY, $8.00, INS. $4.00, MUDDY ROADS AND NO RADIO STATION." -- COMING BACK FAST.

Signed: Jordan J. Lee.

Staff Sergeant Lee is now back on the job.

A QUESTION OF MESS FACILITIES

By the Chanute Field Correspondent

In the November 15th issue of the Air Corps News Letter, the Chanute Field Correspondent noted the mess-hall story written by the Hickam Field Correspondent.

Undoubtedly, they have a fine establishment there, but we of Chanute Field are inclined to think that "if you haven't seen the mess facilities at this station, you 'ain't seen nothing!'"

Now this is a strong statement to make; however, so firm are we in our convictions that we cannot but regard Hickam Field's boast as a challenge. No longer will we hide our light under a bushel; we present this article to prove that the efforts of Major Edgar T. Noyes, Mess Officer, and his staff, would make the Hickam place look like a corner lunch-stand!

First, let's contrast feeding 11,000 men (Chanute Field) against that of feeding 2,800 men. At present, this station has two mess-halls, each feeding approximately half of the men, at the rate of 60 men per minute and accomplishing this gigantic task in less than two hours!

An average Sunday dinner, when a large portion of the men are not eating at Chanute Field, would tip the scales at better than seven tons, if weighed prior to serving. In place of the"mere ton of meat," mentioned in the article referred to, the butchery staff feels fortunate, indeed, if called upon to prepare less than two tons of beef (or what have you) for a single dinner! And 1,500 pies, prepared by our own bakery, are usually served, too.

Instead of the 750 quarts of milk, (Hickam's quota for a single meal; just imagine!), about 4,150 quarts of milk are used for supper each night. What's more, the men are receiving a quart of milk per day.

The General Mess at Chanute Field was established as such in the early twenties, and up until the spring of 1939 was messing a total of anywhere from 500 to 1,000 men. Plate service had been the method used. An old, shabby wooden World War I hangar with a lean-to on each side served for the dining hall, the kitchen and service rooms. In the spring of 1939, and because of the prospective increase in the strength of command, the mess was converted to cafeteria-style, with two steam tables and serving counters, both of local manufacture, made out of salvaged aluminum which had been found unfit for airplane use. From thie meager beginning the principle of rapid feeding was evolved. By the fall of 1939, the General Mess had been expanded to a six-line cafeteria, the length of the building and lean-to's increased to 240 feet. Items of mess equipment for the mass preparation of food were introduced into the kitchen. Many problems not found in the company-size mess were encountered, met, and solved. These problems are too extensive to dwell on at any length here. The Major told us that he plans to cover it all in a book some day!

Suffice it to say that the key-note problem was one of organization. This was solved by organizing the Mess into three sections: (1) Administrative (Personnel) Section; (2) Messing Section; (3) Mess Supply Section, with commissioned and noncommissioned staff over each section.

The system of feeding and the organization so progressed that by September 21st of this year the Old Mess, as we know it now, with only 840 seats, reached a peak of satisfactorily feeding 8600 men each meal in slightly more than two hours. Loyal cooperation, support, and the enthusiasm of everybody concerned had made such a thing possible.

On September 21st, the New Mess, seating 1,200 men at one time, was opened in the new permanent barracks. Many changes in original design and equipment, based upon the recommendation and experience of the Mess Officer and others who were constantly studying the problems, had been incorporated into the physical layout of the dining hall and the kitchen of the new Mess. These changes were the result of the day-to-day experience obtained in the expansion and operation of the Old Mess. Also within the New Mess building, a bakery having two large ovens and all auxiliary equipment for making bread was installed. The capacity of the bakery, as designed, was only for the number of personnel, 2250, to occupy the permanent barracks. As operated at present, this limited capacity requires that white bread be purchased and the bakery used to bake rye, raisin and wheat bread and the pastries only. Both a pie machine, such as the one at Hickam Field, and a doughnut machine are badly needed. The bakery is operated by the General Mess Supply Section.

The two messes (Old and New) were then incorporated into one General Mess, the ration strength of each mess as of this date being: For the New Mess approximately 7,000 men, and for the Old Mess approximately 4,000 men.

Many innovations have been incorporated. For instance, two School Mess Squadrons, with an authorized strength of 200 men each, with appropriate grades and ratings, have been constituted to

administer the permanent mess personnel. Daily details from organizations eating in the Mess in the ratio of one daily to each two permanent men are assigned to each Mess. All of the Administration and Supply for both Messes are centralized under the General Mess officer with three assistant officers, one of these for the mess administration and two for mess supply.

In addition, the Mess Administrative Officer is also the Commanding Officer of one of the mess squadrons, and the Mess Supply Officer is Commanding Officer of the other mess squadron. One additional officer is assigned to each mess. This latter officer, the noncommissioned officers and all mess personnel are relieved of all supply and overhead administrative matters, and are thereby able to devote themselves exclusively to the operation of the Mess proper.

The General Mess Steward, whose function is that of menu planning and preparation, is solely responsible to the General Mess Officer. He, too, is relieved of all personnel and supply matters, except to plan quantities and delivery dates on all meat, fish and dairy products. He informs Supply of his menu requirements.

Menus are common for each Mess, and copies of the menu, which also show quantities of items to be prepared and served, are furnished the Mess Supply for issue purposes.

The method of accounting is so developed that the exact standing of the Mess is instantly available to the Mess Officer at all times.

Two additional large messes are now under construction at Chanute Field and are expected to be ready by March 15, 1941. Each of them will be 325 feet long, with ten serving lines, and will be capable of feeding a capacity of 9,000 men each. Thus, with all four messes in operation, approximately 30,000 men can be satisfactorily fed at Chanute Field. These new messes will seat 1500 men each at one time. They will be equipped with the latest and most modern type of kitchens, serving and dining hall equipment. Their design and planning were the result of intensive study of the needs for the efficient operation of large messes.

When placed in operation, these two new messes will also be incorporated into the General Mess. Menus will then be common for all four messes. The tremendous advantages in the economy of supply and of operating personnel are self evident. Another advantage, and by no means the least, is that the quantity and quality of food which may be served for like value of the ration is considerably higher than in the company-size mess. The economy of the permenant operating personnel is worthy of note, only three percent of the total personnel fed being required for the operation of the 10,000-man mess, as against a much higher percentage for the company-sized mess.

Some idea of the supply problem may be gained when it is realized that approximately nine pounds of food containers, etc., must be handled and accounted for daily for each man fed. This is approximately equal to 45 tons, or two freight car loads, daily at present.

We were particularly anxious to ascertain the outstanding characteristic of the large cafeteria mess. This we discovered to be its flexibility. A glance at the schedules for feeding thoroughly convinced us of this. With two shifts of classes in the School, the feeding is virtually continuous from 5:00 a.m. to 8:30 p.m. daily on all week days except Saturdays.

Another innovation in the Chanute Field General Mess might be of general interest, this being the system used for encouraging and receiving ideas, suggestions and complaints regarding the mess. All personnel are encouraged to make constructive written ideas, suggestions, and complaints, signing them or not, as they see fit. These are confidential and, where practical, are incorporated into the operation of the Mess.

While we acknowledge that Hickam Field has the largest mess hall in the Hawaiian Islands, we ask you, how could they even remotely approach being "probably the largest in Uncle Sam's far reaching domain" when there is Chanute Field to reckon with?

---oOo---

FILMING OF "WINGS OF STEEL."

The Air Corps Training Detachment at Cal-Aero Academy, Ontario, Calif., was temporarily turned into a motion picture studio. The filming of "Wings of Steel," a Warner Brothers Technicolor production, written around the primary training of four Flying Cadets, is being entirely produced at the Detachment.

A troop of 75 actors and technicians, under the supervision of Director D. Reeves Eason, are connected with this production.

Joe E. Brown, who is also under contract with Warner Brothers and whose son is a cadet at Cal-Aero, has been visiting the Detachment during the filming of the picture, although he does not appear in it.

---oOo---

High Altitude and Its Effect on the Human Body. I[§]

WALTER M. BOOTHBY, W. RANDOLPH LOVELACE, II, AND OTIS O. BENSON

The Mayo Clinic

Reprinted by permission of the Institute of the Aeronautical Sciences, Inc.

SUMMARY

This paper is a report of the experimental data, mainly physiologic, concerning high altitude flying (up to 40,000 feet) obtained during the last two years in the Laboratory for Research in Aviation Medicine of the Section on Metabolic Research of the Mayo Clinic. The work has centered in the main around two subjects (1) anoxia (insufficient oxygen) caused by low barometric pressure and practical methods of its prevention, and (2) the dangers of aeroembolism and methods of avoiding the same. Training methods for aviation personnel in these subjects, and the necessity therefore, have been mentioned briefly.

During the last five years, as the growth of aviation has been more and more rapid, physiologic and medical problems have developed, which are definitely dependent on and associated with the fact that man is no longer limited to the land and sea and that the military aviator soars in the air to a height of 7½ miles; he now goes higher and goes longer distances at greater speed than any other living creature. Medical science, therefore, was confronted with innumerable new physiologic and medical problems and, as a result, two and a half years ago the Board of Governors of the Mayo Clinic in conjunction with the Mayo Foundation, University of Minnesota, established the laboratory for Research in Aviation Medicine as part of the Section on Metabolic Research of the Mayo Clinic. In this paper the authors present the results of their investigations with the hope that they will prove of assistance in maintaining aviators, as human machines, functioning normally up to 35,000 feet and with little departure from normality up to 40,000 feet.

Necessity for a Normal Supply of Oxygen to Prevent Altitude Sickness

To keep the human machine working normally it must have an adequate and normal supply of oxygen delivered at an essentially normal partial pressure. * The effect of a decreasing pressure of oxygen on the human body is well illustrated in Figs. 1a to f by photographs taken of a burning candle at barometric pressures corresponding to those at elevations of 1000, 5000, 10,000, 15,000, 20,000, and 25,000 feet. Obviously there is a marked decrease in the size and brilliance of the flame at increasing altitudes. Not only does the brilliance become less with increasing altitude, but the flame itself becomes much weaker and therefore in greater danger of being blown out. This corresponds to the weakness of the human flame and the danger of sudden collapse at altitudes in the region of 20,000 feet.

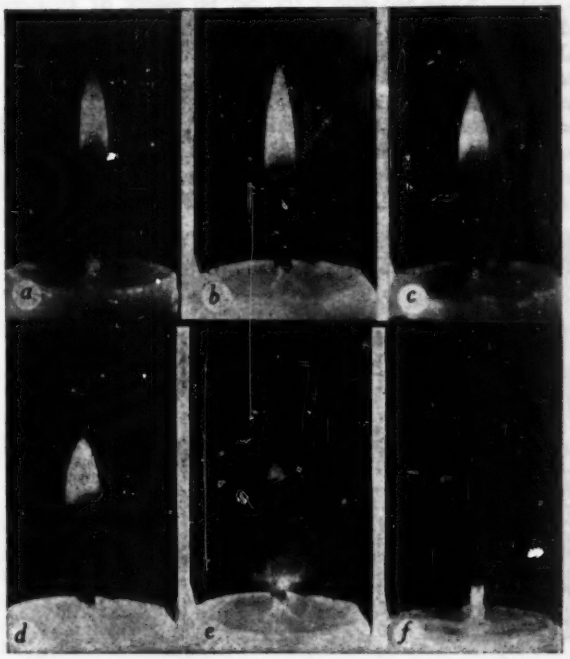


FIG. 1. Effect of decreasing barometric pressure on the brilliance and strength of the flame of a burning candle at elevations corresponding to: a, 1000; b, 5000: c, 10,000; d, 15,000; e, 20,000; and f, 25,000 feet, respectively. With ascending elevations note decrease in both the brilliance and strength of the flame; at 25,000 feet (f) the flame is just able to burn, and went out before the barometric pressure was decreased to that corresponding to 26,000 feet.

It is absolutely necessary, therefore, to maintain a normal supply or partial pressure of oxygen in the lungs because the energy which runs the brain as well as the moving parts of this human machine is activated entirely by the burning or combustion of food by the oxygen carried by the blood stream to every cell of the body; therefore each cell, even those in the more distant parts of the body, must receive its regular supply of oxygen, and, what is more, the oxygen must be delivered to these cells essentially at the normal oxygen pressure. Unfortunately it is not sufficiently well realized that the effect produced by a decrease in the partial pressure of oxygen in the human body is a function of both time and intensity. This point is illustrated by two examples:

(1) At 28,800 feet the barometric pressure is 238.1 mm., of which approximately 21 per cent or 50 mm. represents the partial pressure of oxygen in the outside air - i.e., the air to be inspired. In the lungs, however, the air will contain 47 mm. of water

* Gases are effective in the body, as in other chemical reactions, according to the gas pressure which they exert. When more than one gas is present, its fraction of the total pressure is referred to as its partial pressure. At all altitudes the air contains in round numbers 21 per cent oxygen, 78 per cent nitrogen, and 1 per cent of rare inert gases of which the chief is argon. It contains only traces of carbon dioxide, 0.03 per cent, which is the gas exhaled by the body as a result of combustion of food.

vapor and 40 mm. of carbon dioxide as a result of absorption of 40 mm. of oxygen at an R.Q.* of 1.0 for utilization by the cells in combustion and (assuming no acclimatization or temporary compensation by increased respiration) the partial pressure of oxygen in the lungs, therefore, would theoretically be zero, calculated according to the formula which is given below. Of course, without previous acclimatization and training in how to breathe, the subject could live only a few minutes, even by excessive breathing.

(2) At 20,000 feet the barometric pressure is 349.1 mm. of which approximately 21 per cent or 73 mm. is the partial pressure of oxygen in the inspired air. In the lungs, provided the body had no means of compensating temporarily by breathing more deeply, the partial pressure of oxygen would be only about 23 mm. calculated according to the formula which is given shortly. However, as shown by experiments in a low pressure chamber (Fig. 2), the body can compensate for a brief period by excessive breathing, and the oxygen can be raised to approximately 36 mm. (Fig. 3). The

FIG. 2. A medium-sized low pressure chamber for research and training. It will hold six persons comfortably or three when one is lying down. The physiologic investigations at high altitudes reported in this paper were carried out in this chamber.

time element comes in at this point because one cannot compensate by increased breathing to this degree for more than fifteen to thirty minutes without development of fatigue and acapnia** with danger of cessation of respiration followed by death. Toward the end of the experiment the alveolar carbon dioxide, as shown by curve B (Fig. 3), is falling fast; this change indicates that the danger of acapnia is near.

The length of time an aviator can withstand anoxemia varies somewhat among normal individuals, and in the past the selection of aviators has been largely based on their ability to withstand anoxemia or lack of oxygen. Of course, an aviator in good condition can with-

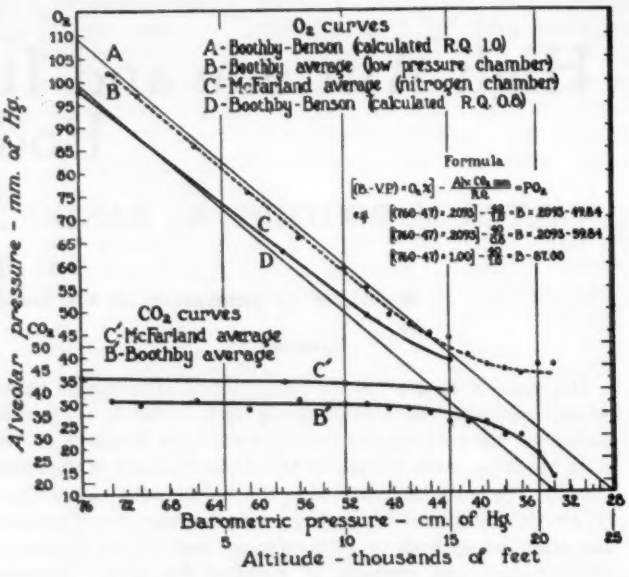

O_2 curves
A - Boothby-Benson (calculated R.Q. 1.0)
B - Boothby average (low pressure chamber)
C - McFarland average (nitrogen chamber)
D - Boothby-Benson (calculated R.Q. 0.6)
Formula
CO_2 curves
C' - McFarland average
B - Boothby average
Alveolar pressure - mm. of Hg.
Barometric pressure - cm. of Hg.
Altitude - thousands of feet

FIG. 3. Alveolar oxygen and carbon dioxide pressures at various altitudes while breathing air.

stand the anoxemia caused by the low oxygen pressure found at 15,000 feet much longer (more than an hour) than at 20,000 feet (less than half an hour). The critical threshold for death of a normal unacclimatized man is between 20,000 and 23,000 feet. In fact, above 10,000 feet every increase in elevation amounting to 1000 feet shortens immeasurably the length of time the aviator can safely maintain his altitude. However the "ceiling" of most aviators in good condition does not vary more than a few thousand feet, and as the need for staying long periods of time at high altitudes today is greater than formerly there is little or no point in making the selection on this basis. It is far better, as will be pointed out in many places in this paper, to prevent anoxemia and never to subject the aviator to low concentrations of oxygen.

Fig. 3 shows how the partial pressure of oxygen in the alveolar air, i.e., in the depths of the lungs, varies as the aviator ascends.

The theoretical partial pressure of oxygen in the alveoli of the lungs can be calculated by the formula:

$$(O_2)_p = [(B - \text{V.P.}) \times O_2] - (CO_2)_a/\text{R.Q.}$$

where $(O_2)_p$ = pressure of oxygen in alveoli of lungs
V.P. = vapor pressure saturation at body temperature (37°C.) = 47 mm.
B = barometric pressure
O_2 = relative concentration of oxygen in air = 0.21 or, more exactly, 0.2093
$(CO_2)_a$ = average pressure of carbon dioxide in alveoli of lungs = 40 mm.
R.Q. = respiratory quotient

and where all pressure values are expressed in millimeters of mercury.

Example: Breathing air with R.Q. of 1.0 at sea level

$$(O_2)_p = [(760 - 47) \times 0.21] - 40/1.0 = 109$$

In Fig. 3, curve A represents the theoretical curve whenever the subject is burning nothing but carbohydrate (R.Q. = 1.0) as happens for a short time after

* R.Q. = Respiratory quotient which is the ratio between the volume of carbon dioxide expired and the volume of oxygen inspired. The R.Q. varies, fundamentally, with the proportion of each type of food being burnt, fat having an R.Q. of 0.71, protein of 0.80, and carbohydrate of 1.00; however, for short periods of time, factors other than food may influence the observed R.Q.

** Acapnia is a condition of diminished carbon dioxide in the blood and is produced by hyperventilation (excessively deep and fast breathing). As carbon dioxide is one of the most important respiratory stimulants, normal automatic breathing is likely to stop suddenly if too much carbon dioxide is washed out of the blood.

eating considerable amounts of sugar or candy, and curve D represents the theoretical curve for a respiratory quotient of 0.8 when he is burning more fat (R.Q. 0.7) than carbohydrate. More oxygen is needed to oxidize to carbon dioxide and water a substance like a fat such as tripalmitin, ($C_{51}H_{98}O_6$), than a substance like carbohydrate (sugar) ($C_6H_{12}O_6$), because the former must have extra oxygen to unite not only with the carbon to form carbon dioxide, but also with the hydrogen to form water. Body reserves of carbohydrates are small as compared with normal reserves of fat; therefore, within an hour after eating, the R.Q. starts to approach that of fat and at the end of 12 hours will usually be around 0.8. Incidentally, these curves suggest that a high carbogydrate diet may add 1000 or 2000 feet to an aviator's ceiling; therefore, the possible advantages of supplying pilots and commercial airplane passengers with candy (hard candy or chocolate bars) as well as with gum should be considered.

The observations shown in curve B, Fig. 3, were carried out shortly after breakfast, at a time when the R.Q. would, on the average, fall between 0.9 and 1.0. This is to be contrasted with the results obtained by McFarland[1] and his associates, which are shown in curve C. His experiments were carried out under basal conditions; that is, without breakfast, and at least twelve hours after eating. Therefore the R.Q. of his subjects would average close to 0.8, and his results, curve C, were definitely lower than those given here (curve B) and were in close agreement with the theoretical curve D calculated for an R.Q. of 0.8. The possible influence of three other factors, however, must be considered in attempting to interpret the slight difference in level between the authors' data and those obtained by McFarland. One of these factors is that his experiments were carried out in Boston, at sea level, while those reported here were carried out on subjects acclimatized to an elevation of 1000 feet; a second factor, the influence of which has not yet been determined, is that McFarland used high nitrogen and low oxygen mixtures to simulate altitudes whereas the author's experiments were actually carried out in a low pressure chamber; a third factor, which possibly accounts for evidence in his curve of a compensatory factor beginning at a lower level than in the author's experiments is that apparently his subjects were "taken up" more slowly and that the time factor or a more prolonged exposure to an increased elevation played a role in producing an earlier recognizable compensation by increased rate and depth of respiration. The very fact that the uncompensated curve for R.Q. of 0.8 is lower may stimulate an earlier attempt at compensation and as the direction of the compensating curves in both experiments indicate, the final compensated partial oxygen pressure may be within practical limits identical for any R.Q.

It is important to note in Fig. 3 that the averages of the determination of the alveolar oxygen at ascending altitudes made in the low pressure chamber, curve B, correspond very closely to the theoretical curve A up to about 12,000 feet. Above this elevation the partial pressure of oxygen in the alveoli becomes increasingly higher than the theoretical curve; the latter is based on the assumption that the body does not compensate. However, the fact that there is a corresponding decrease in the alveolar carbon dioxide pressure, Curve B', indicates that the body actually is able to compensate to a certain limited degree by hyperventilation. A similar tendency for the body to to compensate is evident in the carbon dioxide curve in McFarland's data as shown by Curve C'.

However, while the possible significance of the slight differences between the experimental data given here and those of McFarland have been stressed, it is important that the main facts brought out by the two series of experiments be not obscured; namely, (1) that both positively indicate a progressive and essentially similay decrease in alveolar oxygen pressure with ascending altitude; (2) that this relationship of barometric pressure to alveolar oxygen pressure is linear up to about 12,000 feet and that above this elevation physiologic compensation is evident. However, as both series of experiments were carried out with meticulous care under their respective conditions, it is, for the present at least, permissible to draw attention to the possible significance of the dissimilarity in the data from the two laboratories, especially as the magnitude of the divergence referred to seems to be in accord with theory, dependent on the differences in conditions.

The average alveolar oxygen pressure in the lungs can be increased definitely by slow deep breathing, as shown in Fig. 4 and the aviator's "ceiling" increased temporarily by as much as 1000 or 2000 feet. It must

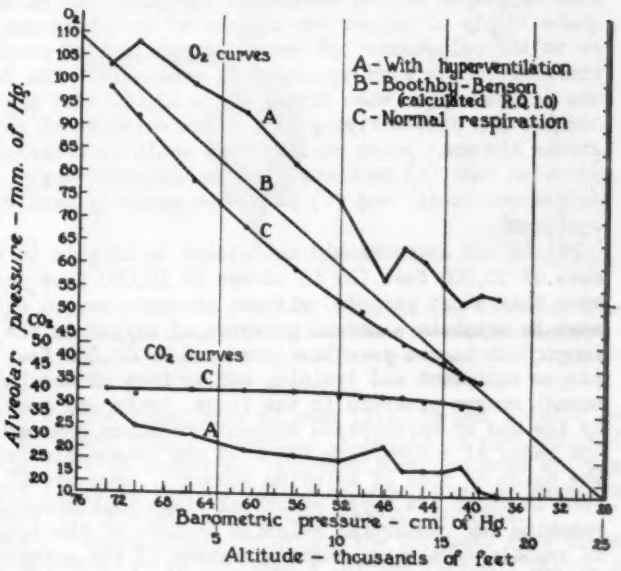


FIG. 4. The effects of slow deep breathing of air as opposed to normal breathing on alveolar oxygen and carbon dioxide pressures at various altitudes.

be observed, however, that the alveolar oxygen increases and alveolar carbon decreases with deeper respiration. The decrease in carbon dioxide is dangerous because through its effect on the hydrogen-ion concentration of the blood it is a direct respiratory stimulant and is the chief factor in rendering breathing automatic. When the alveolar carbon dioxide is decreased, if the aviator is absorbed in fighting he may forget to breathe voluntarily and become unconscious from lack of oxygen before there is an automatic stimulation of respiration by reaccumulation of carbon dioxide.

Flying at or above 15,000 feet for any considerable time causes fatigue - more fatigue, increasing both with an increase in elevation and with an increase in length of time, than results from correspondingly severe mental and physical work at sea level. Even, as shown by Armstrong,[2] an altitude corresponding to 12,000 feet in a low pressure chamber, where there is no sense of fear or excitement, for several hours

daily for several weeks causes subjects to become nervous and irritable. While aviators are well aware of the fact that an altitude of 18,000 feet and especially 20,000 feet causes rapid development of fatigue, for this fatigue becomes obvious even after a single comparatively short flight, they are, unfortunately, less aware of the ill effects which develop more slowly and more insidiously at 12,000 and 15,000 feet. However, that is why pilots are permitted to fly only a certain small number of hours each month - many fewer hours than workers in other fields of equal responsibility are accustomed to perform with safety to all concerned. These short hours were established before facilities for administering oxygen efficiently were available, in an attempt to avoid the mental fatigue and exhaustion produced by lack of adequate oxygen pressure in the lungs and therefore in the brain and muscles that have caused some accidents commonly attributed to "pilot error." These accidents cannot any longer be considered solely pilot error but if they occur must now be blamed either to the lack of proper oxygen inhalation equipment and an adequate supply of oxygen for the use of the pilot and crew or to the reluctance* of crews through lack of proper training to use such equipment if available. The failure to use oxygen when flying above 10,000 feet may well shorten the active flying life of an aviator and may ground him many years earlier than would be necessary provided that (1) he always had an adequate supply of oxygen available, and (2) he always properly used such equipment.

Pilots and crews should not ascend to heights in excess of 15,000 feet (or in excess of 10,000 feet for more than short periods) without adequate oxygen equipment to maintain a normal pressure of oxygen in the lungs. It is now possible to ascend to 33,000 feet with proper equipment and training and to have an absolutely normal oxygen pressure in the lungs, brain and muscles. By the use of appropriate oxygen inhalation apparatus the rates of oxygen flow required are reasonable from the point of view of aviation economy. However, 30,000 feet is about the upper practical limit physiologically speaking for commercial aviation because of the danger of rapidly developing unconsciousness if the aviator should remove the oxygen mask. An elevation of 40,000 feet is the upper practicable limit that can be attempted in military aviation even with the aid of the inhalation of absolutely pure oxygen, perfect equipment, and advanced training, because at altitudes above 33,000 feet the sum of the partial pressures of oxygen, carbon dioxide, and water vapor becomes the total pressure in the lungs and progressively and rapidly decreases below normal even if no air with its high (80 per cent) nitrogen content is permitted to leak in. Although the partial pressure of oxygen in the alveoli at an altitude of 40,000 feet, when pure oxygen is being breathed, corresponds to that at 11,000 feet when air is breathed, yet the altitude of 41,000 feet and especially of 42,000 feet is extremely dangerous as can be seen from the steepness of curve B (Fig. 5) because there is no leeway or margin of safety, and collapse and unconsciousness would develop rapidly at an elevation of 43,000 feet or even at 41,000 feet if a trace of air leaked in. Therefore to go to elevations in excess of 40,000 feet oxygen must be administered under positive pressure by means of a pressure suit. For the safety of all concerned no aviator at any time, whether as a pilot or as an observer, should exceed 15,000 feet without adequate oxygen

* It is hoped that shortly not only the aviation companies but the various government authorities concerned will issue definite rules and regulations concerning the use of oxygen by pilots and crews.

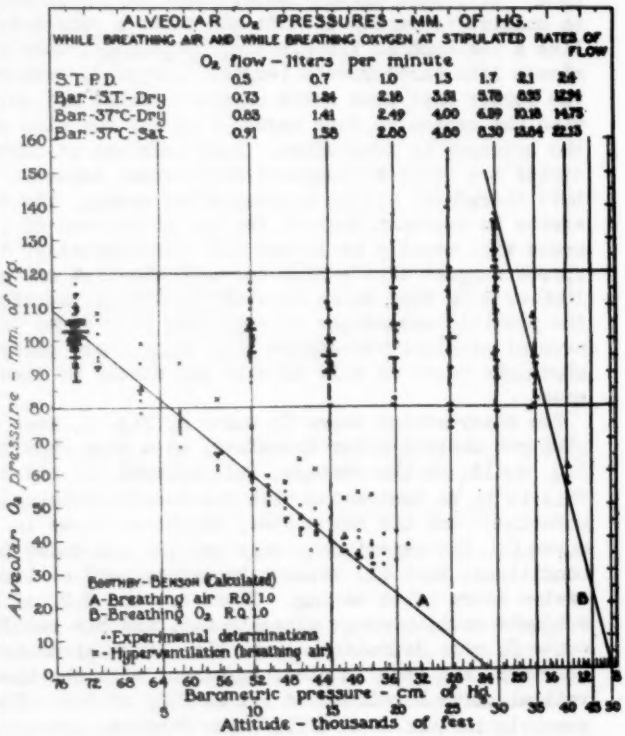

ALVEOLAR O_2 PRESSURES - MM. OF HG.
WHILE BREATHING AIR AND WHILE BREATHING OXYGEN AT STIPULATED RATES OF FLOW
O_2 flow - liters per minute
S.T.P.D. 0.5 0.7 1.0 1.3 1.7 2.1 2.6
Bar.-37°C.-Dry 0.73 1.24 2.16 3.81 5.78 8.95 12.94
Bar.-37°C.-Dry 0.83 1.41 2.49 4.00 6.89 10.18 14.75
Bar.-37°C.-Sat. 0.91 1.58 2.66 4.60 8.30 13.04 22.13
Alveolar O_2 pressure - mm. of Hg
Boothby-Berson Calculated
A-Breathing air R.Q. 1.0
B-Breathing O_2 R.Q. 1.0
--Experimental determinations
= - Hyperventilation (breathing air)
A
B
Barometric pressure - cm. of Hg
Altitude - thousands of feet

FIG. 5. Alveolar oxygen pressures. Series around curve A were obtained while breathing air. Series running horizontally were obtained while breathing oxygen at the rates of flow indicated at top of chart.

equipment and training.

Methods of Preventing Anoxia (Oxygen Insufficiency)

There are three different principles on which methods of compensating for the decrease in partial pressure of oxygen at high altitudes may be based: (1) the supercharged cabin using air under pressure, (2) the closed circuit oxygen system, and (3) the open circuit oxygen system.

Supercharged Cabin. Supercharged cabins in which the air pressure inside is increased to 1 or more pounds per square inch above the external atmospheric pressure are, of course, ideal from all points of view for long distance land and transoceanic commercial flying. Such planes have been developed and proved commercially practical. Whether or not the extra construction weight (with loss of pay load) as well as increased cost of construction and maintenance can be reduced so that this method can be extensively used on small types of aircraft remains to be seen.

Closed Circuit System. The most economical principle for the administration of oxygen is, of course, the closed circuit system. By such a system is meant a closed, circuitous pipe line approximately 1 inch inside diameter, with an expansible chamber or bag of a capacity of not less than 5 liters for a single individual although this ratio would not have to be maintained for multiple units; a container for soda lime or similar substance for absorbing carbon dioxide; a circulating pump if the system is multiple, or a properly placed inspiratory-expiratory valve when the system is constructed for use by only one individual; and an absolutely airtight face mask. Large reducing valves and automatic controls must be furnished to regulate the supply of oxygen. Both in the laboratory and level flying, this type of appa-

ratus is particularly economical, as theoretically the total amount of oxygen needed should not exceed the amount of oxygen each individual actually burns, which is approximately 0.25 liter at standard temperature and pressure dry (S.T.P.D.) per minute for a pilot who is relatively inactive up to 0.7 liter (S.T.P.D.) per minute for an active member of the crew working or moving about in the plane.

The practical objection to the closed circuit system is that air can easily leak into the system around the mask or many other places causing a dangerous accumulation of nitrogen. For this reason the method is not used in commercial aviation and also has proved too dangerous for extensive military use. Furthermore, the economy in the use of oxygen is not as great in aviation as one would at first suspect from theory because of losses occurring during rapidly alternating ascent and descent. During descent the oxygen in the system will be compressed and the volume decreased, thus automatically activating the oxygen supply valves. On the following ascent, the oxygen would expand with the decrease in barometric pressure, and the oxygen would be lost through the escape or pressure safety valves. Rapid alternation of such procedure would be very wasteful of the oxygen reserves.

Open Circuit Apparatus. The other type of apparatus is known in the physiologic laboratories as an "open circuit apparatus;" that is, the air is inspired with the addition of an appropriate amount of oxygen and then expired directly into the surrounding air with only a very small, incidental amount of rebreathing. In the open circuit type of apparatus no attempt is made to remove the carbon dioxide so that no more than a very small amount of the expired air with its enriched oxygen content can be used again.

However, such a system, to be economically of practical value in aviation or in clinical medicine for administration of oxygen, must contain a reservoir bag, in order to collect, save and have ready for use on the next inspiration, the oxygen that has been flowing from the tank during expiration. As the major part of the inspiratory phase of respiration is only from a third to a fifth of the respiratory cycle, it is obvious that unless such provision is made, only a third to a fifth of the oxygen supplied can be utilized. We wish to emphasize this point because many wonder about the necessity of a reservoir bag. Failure to use more than a third to a fifth of the oxygen flow is one of the many reasons why the old-fashioned "pipestem" method was so inefficient and is now little used.

However, to prevent the accumulation of an excessive and unbearable amount of carbon dioxide in such a reservoir bag, one must use either a small bag with a capacity somewhat less than an average normal expiration (450 c.c.) or else prevent, by other rather complicated means, the expired air from entering a larger bag. This reservoir bag is preferably placed close to the mask. However, it can be placed at the end of a long corrugated rubber tube (1 inch in diameter) provided (1) that the bag does not exceed a capacity of 450 c.c., (2) that the fresh oxygen intake is led directly into the bag, and (3) that the automatic sponge rubber air regulator or expiratory valve is close to the mask. For most purposes, both in aviation and in therapy, it is preferable to have the bag attached directly to the mask.

B.L.B. Oxygen Inhalation Apparatus

As the original apparatus designed by Boothby, Lovelace, and Bulbulian [3,4,5,7,9] has been described elsewhere in detail, only the recent improvements will be mentioned here.[9] The chief of these is that a sponge rubber, automatic air regulator has been substituted for the rather complicated metal connecting-regulating device. At low altitudes mixtures of air and oxygen are used; at altitudes of more than 30,000 feet practically nothing but pure oxygen from the tank is used. By a proper setting of the oxygen flow the amount of additional air required is supplied automatically through the sponge rubber disc. The sponge rubber disc causes just sufficient resistance so that no appreciable air enters the bag on inspiration until the reservoir bag is completely collapsed; conversely no appreciable amount of air passes out through the sponge rubber disc until the reservoir bag is completely distended. After the bag is extended or distended completely the air passes through the sponge rubber disc with scarcely noticeable resistance.

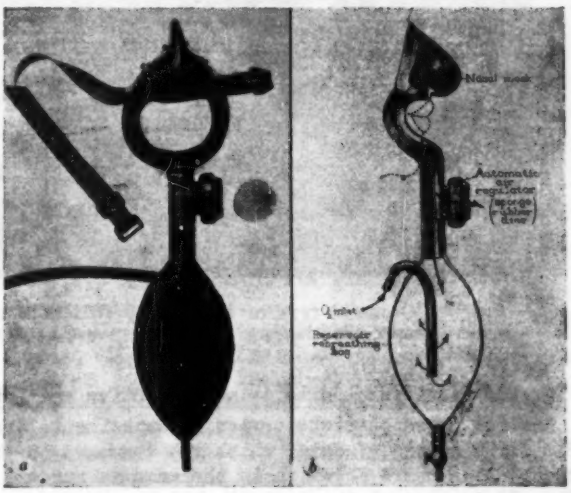


FIG. 6. Nasal type of B.L.B. oxygen inhalation apparatus for commercial aviation and for oxygen therapy; a, mask and bag; b, diagram showing direction of air current during breathing.

The nasal type of mask (Fig. 6a and b) with the mouth free for talking or eating is preferable for use on commercial airlines both for crew and passengers as the elevations to which they go rarely exceed 15,000 feet and at the most 20,000 feet.

For military aviation, the oronasal type of mask (Fig. 7) is preferable for two reasons: First, during the excitement of combat the flyer might need to breathe through his mouth, and second, he would often go to much greater altitudes (35,000 to 40,000 feet). In order to be able to use the radio microphone efficiently, a little turret was constructed directly opposite the mouth to hold the sponge rubber disc and against which the microphone may be closely applied. There is little or no interference with the transmission of sound waves if the sponge rubber automatic air regulator is placed in a specially constructed groove at the outer end of the turret; in fact at high altitudes increased efficiency is obtained in part by exclusion of extraneous noise. Furthermore, this is an ideal situation for the sponge rubber disc because it is so close to the mouth that a greater part of the expired air with its moisture content will pass out through the sponge rubber without freezing even if the temperature is very low. In fact, tests have shown that not enough moisture will accumulate and freeze to render the apparatus inefficient in an hour even if the temperature is as low as -30°C. (-22°F.). This time can be prolonged by squeezing the turret and reservoir bag to "de-ice" them or break up any ice that may be collecting. In the military model, arctic rubber is used which will

not become stiff for at least an hour at -40°C.(-40°F.); it is absolutely essential, of course, that the reservoir bag be made of rubber which maintains its flexibility at low temperatures.

FIG. 7. Oronasal type of B.L.B. oxygen inhalation apparatus especially designed for military use at very high altitudes.

Oxygen Requirement with Aviator Inactive and Active

In Fig. 5 two complete series of experiments are shown. The first series of data, which run downward to the right along curve A (which is the same as curve A in Fig. 3), represent the individual determinations composing the averages from which curve B, Fig. 3, was constructed, the significance of which has already been fully discussed. The second series of data (running horizontally) was obtained from the study of several subjects in the low pressure chamber at various altitudes when wearing the B.L.B. oxygen inhalation apparatus and when the rates of flow of oxygen supplied were as indicated at the top of the chart. These rates of flow are expressed (1) at S.T.P.D. (760 mm. 0°C. dry), (2) at the existing barometric pressure and 0°C., dry, (3) at existing barometric pressure and body temperature, dry, and (4) at the actual condition of the air as it is in the lungs at the existing barometric pressure (altitude) and saturated with moisture at the body temperature of 37°C. (98.6°F.).

The first method of expressing volume at S.T.P.D. is of particular value to the supply officer in order that he may readily calculate the amount of oxygen he must supply for a trip of given duration and at a given altitude; it also permits calculations of the amount which may be needed during possible variations of the original schedule. The fourth method is of physiologic interest in that it gives the volume that would be occupied by the oxygen in the lungs where it would be saturated with 47 mm. water vapor corresponding on the average to a body temperature of 37°C. (98.6°F.). The second and third methods of expression are given in order to show the magnitude of each factor that influences the volume of oxygen at different altitudes.

The experimental data show that the amounts of oxygen recommended by the authors are sufficient to maintain an essentially normal concentration of alveolar oxygen (between 80 and 120 mm.) for all elevations up to and including 35,000 feet, when the aviator is sitting and doing work comparable to operating a plane under normal air conditions. The experiments that show rather high results probably would be obtained in actual flight when running on the automatic pilot and the lower results, when the pilot is actually maneuvering the plane. Theoretically, when inhaling pure oxygen the aviator should have a normal alveolar oxygen pressure at 33,000 feet; the data show on the average that this is true and even up to 35,000 feet in no single experiment is the alveolar oxygen pressure below what it would be at 6000 feet without oxygen.

The data for 40,000 feet show that the alveolar oxygen pressure, in the few determinations there was opportunity to make, corresponds to an alveolar oxygen that would be obtained from a pilot breathing air without an additional supply of oxygen at 11,000 feet. In fact, the data are even slightly above the line representing the theoretical value for breathing pure oxygen. This is due to the fact that the subjects were able to compensate by increasing the rate and depth of respiration and thus to elevate slightly the average alveolar oxygen pressure. The entire series of experiments give definite proof of the efficiency of the B.L.B. oxygen inhalation apparatus.

In Fig. 5 as well as in earlier publications the authors specified only the rates of delivery of oxygen per minute for the pilot using the B.L.B. oxygen apparatus while sitting and maneuvering his plane under ordinary conditions, because there was the basic level which had to be established first and was especially important for civil aviation. In Table 1 there are indicated under the heading "Aviator, inactive" the minimal rates of oxygen flow needed by an aviator at various altitudes using the B.L.B. oxygen apparatus while sitting and piloting his plane with a minimal amount of muscular exertion; under these conditions, an aviator of average size would be consuming about 250 to 300 c.c. (S.T.P.D.) of oxygen per minute measured at standard temperature (0°C.) and pressure (760 mm.), dry. Under the heading "Aviator, active," is given the amount of oxygen needed for a pilot under conditions of rather difficult navigation or for a machine gunner firing but not doing a great deal of lifting or moving about; these degrees of work would roughly correspond to an oxygen consumption of 400 to 500 c.c. per minute (S.T.P.D.). Under the heading, "Aviator, very active" is given the amount of oxygen needed for a pilot or machine gunner working rather strenuously. This is estimated to be between 500 and 700 c.c. per minute (S.T.P.D.); this degree of work would correspond to that of a man walking at a rate of approximately 2 miles per hour. For each value as expressed at S.T.P.D. the value to which this amount of oxygen expands in the lungs of the aviator at each altitude is also given.

As far as the authors know, no measurements of oxygen consumption have been made under these varying conditions, especially under fighting conditions. Until such measurements are available the rates of oxygen consumption on which these rates of flow are based are entirely estimated except for the minimal requirements recommended for "Aviator, inactive." In military combat, however, the aviator should "play safe" and move his supply of oxygen up to or above the flow required for the maximal altitude that would be reached during combat. Immediately after combat, the pilot and crew members would reduce the rate of oxygen flow to that corresponding to their actual elevation in order to conserve their supply for future needs.

In considering the quantity of oxygen needed by the

TABLE 1

Rates of Oxygen Flow Needed by Aviators at Various Elevations with Different Degrees of Activity when Wearing the B.L.B. Inhalation Apparatus

Actual Elevation (Thousand Feet)	Aviator, Inactive*		Aviator, Active†		Aviator, Very Active‡	
	Set oxygen flowmeter to correspond to:					
	Actual elevation§		5000 feet above actual elevation§		8000 feet above actual elevation§	
	Liters per min.		Liters per min.		Liters per min.	
	S.T.P.D.¶	In body	S.T.P.D.¶	In body	S.T.P.D.¶	In body
0 to 10	0.5	0.9	0.5	1.5	1.0	1.8
11 to 15	0.7	1.6	1.2	2.7	1.4	3.2
16 to 20	1.0	2.9	1.6	4.6	1.8	5.2
21 to 25	1.3	4.8	2.0	7.4	2.2	8.1
26 to 30	1.7	8.3	2.4	11.7	2.6	12.7
31 to 35	2.1	13.8	2.7	17.8	2.9	19.1
36 to 40	2.4	22.1	Dangerous		Dangerous	

* "Inactive": By this is meant that the pilot is sitting in his seat and flying the plane under ordinary atmospheric conditions.

† "Active": By this is meant as strenuous an amount of work as a pilot handling the plane in emergencies or a machine gunner actively firing.

‡ "Very active": By this is meant as strenuous an amount of work as can be performed in an airplane.

§ This setting refers to the Heidbrink type of kinetic flowmeter that has been calibrated according to the recommendations of Boothby and Lovelace. At these settings the actual amount delivered corresponds to the amount in the table. In the calibration of other types of flowmeters, these rates of flow should be conveniently indicated and calibrated for rates of flow indicated in the table by weight.

The columns under "Liters per min." headed "In body" indicate the volume of the oxygen after it has expanded to the condition in the lungs at body temperature (37°C.), saturated with moisture (47 mm.), and at the barometric pressure corresponding to actual altitude.

¶ S.T.P.D.: By this is meant standard temperature and pressure, dry.

body in aviation it is important to note that mental activity, fright, or excitement, as such, does not increase the oxygen requirement directly but only indirectly by increasing muscular activity or muscle tension. That is, the actual energy used in the mental processes by nerve or brain cells is not sufficiently large to be measured by the various forms of apparatus for measuring the energy transformations of man; the increased oxygen consumption sometimes observed under various conditions of excitement is due, therefore, to increased muscular activity of the nerve cells themselves.

(To be concluded in the next issue).

—oOo—

RANDOLPH FIELD COMMANDER TRANSFERRED

Brigadier General John B. Brooks, Commanding Officer and later Commanding General of Randolph Field, Texas, for more than three years, relinquished his post on December 21st to Lieut. Colonel Idwal H. Edwards, former member of the General Staff Corps in Washington, D.C.

General Brooks leaves to assume command of his new post as Commanding General of the Fourth Wing at Westover Field, Chicopee Falls, Mass. Randolph Field has changed radically during his tour of duty. Late in 1937, when then Lieut. Colonel Brooks assumed command, the West Point of the Air was the only primary and basic flight training school for the Air Corps.

First growing pains of the expanding Air Corps were felt at Randolph Field in the spring of 1938, when a class of more than 300 Flying Cadets arrived for primary flight instruction. During the rest of the year, classes of similar size arrived in July and also in October. Students remained at the Texas airdrome for eight months receiving both their primary and basic training there.

In March of 1939, the last primary class reported for duty, and in July of that year, Randolph Field began converting its primary phase of instruction into basic. Instead of classes arriving and departing three times yearly, as had been the policy, they began moving in and out ten times annually. Primary training had been farmed out to carefully selected civil flying schools, operating under Air Corps supervision.

And today Randolph Field is nearing its production level of 4,300 Flying Cadets each year, as compared with about 300 or less during the doldrum days of 1937, when General Brooks assumed command of the "West Point of the Air."

"The present Randolph Field and its training facilities stands as a monument to the leadership and ability of its commander during the past three and a half years," the News Letter Correspondent declares.

By far the largest class of Flying Cadets ever to report to Randolph Field for basic flight training was scheduled to arrive at the Texas airdrome on the last two days of the calendar year of 1940. Approximately 500 student pilots now on the list to report in a single class are tangible evidence that the Army Air Corps is rapidly moving toward its goal of 12,000 additional pilots annually.

Randolph Field's Flying Cadet population will thus increase to almost 900, just a few short of the proposed peak level of 917 men in training. Since this level was not expected to be reached until later in the year, tentative plans are being formulated for caring for an additional number of future pilots over and above the peak load.

Working on a tight flying schedule, inclement weather plays havoc with the general training program. South Texas for the past three years suffered from a severe drought. However, the present winter has brought an unusual amount of rain.

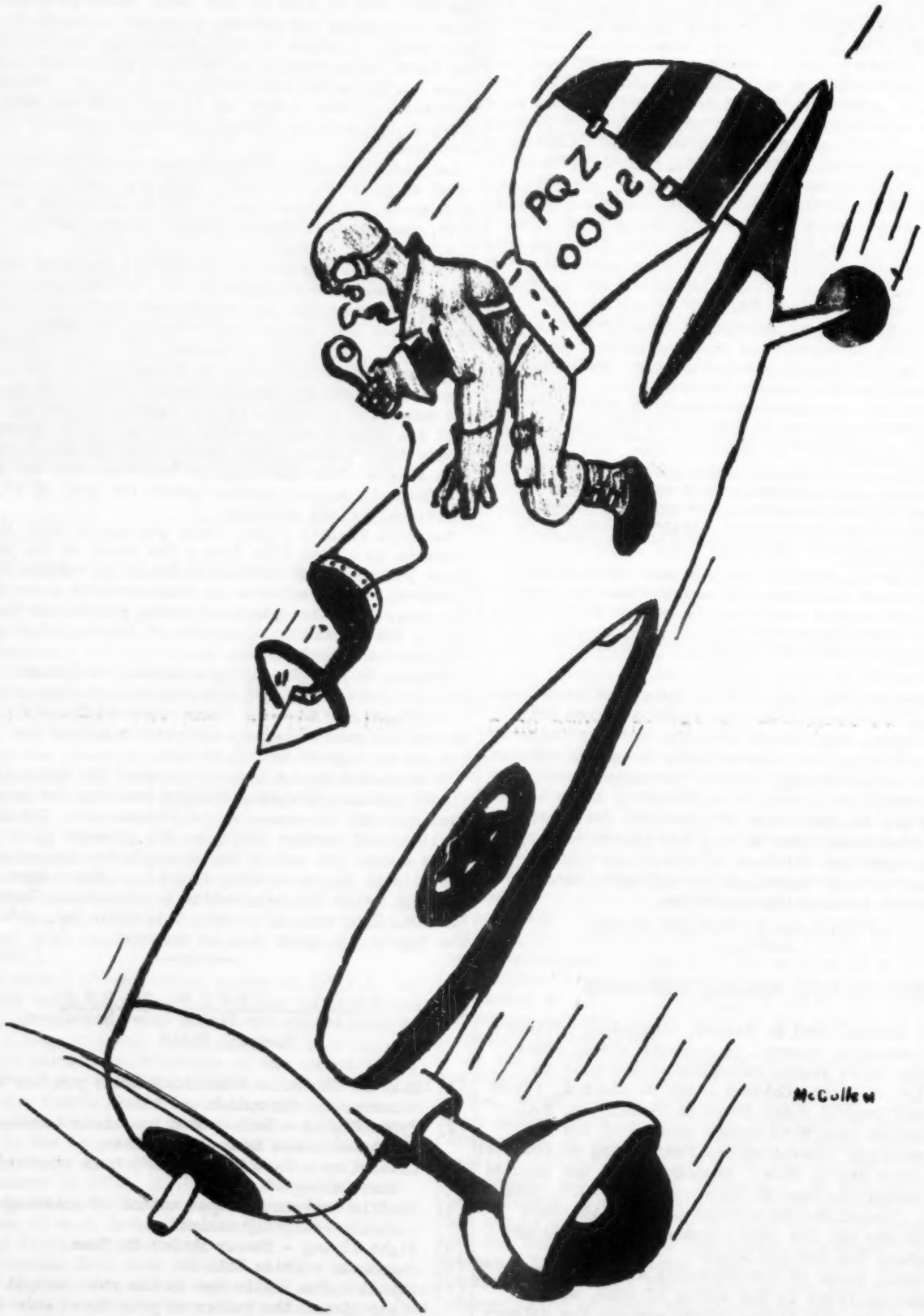
To keep within striking distance of the original flight training program, student training has been conducted off the ramps on many occasions. Latest spell of bad weather coming as the present upper class neared the end of the schedule has forced a curtailment in the holiday schedule. Three days were set aside for celebration of Christmas, December 23d, 24th and, of course, Christmas Day, and New Year's Day alone will be observed.

—oOo—

DODO DEFINITIONS

As compiled by the Flying Cadet Battalion, Randolph Field

(1) Mixture Control - That which tells you how to correctly mix rudder and stick.
(2) Pylon Eights - Method used by pilots to make a date with the farmer's daughter.
(3) Chandelles - Dammit, why don't they standardize these things.
(4) Traffic Pattern - Proper method of entering field - slightly variable.
(5) Night Flying - Nearer My God To Thee.
(6) Parachute - Abide With Me.
(7) Yhoudi - The little men in the rear cockpit who kicked the rudder on your first solo spin.
(8) Gasoline - Never missed until it's gone.
(9) Hangar Flying - 90 percent odor and 10% solid.
(10) Vertigo - Yhoudi's brother.
(11) Instrument Flying - Not even ducks try it.
(12) Clouds - Temptation.



" Lt. DUFFLE CALLING...THIS *--*%#* NEW AUTOMATIC PILOT IS SO GOOD, IT REFUSES TO LET ME TAKE THE CONTROLS ! ! "

EFFECTS OF HIGH ALTITUDES ON OIL PUMP OPERATION
By the Materiel Division Correspondent

With Air Corps pilots flying their planes at higher levels these days, the increased operation at high altitude has resulted in new engine problems to be solved.

The Power Plant Laboratory of Wright Field has just completed a series of tests growing out of reports received from several pilots, operating at high altitude, who observed a loss of engine power, accompanied by a loss of oil through the breather outlets. In all of the cases it was noted that the altitude was 25,000 feet or more.

The tests have indicated that the difficulty is that of inadequate oil scavenging, so that the various parts of the engine "load up" with oil, thereby decreasing the power output. In some cases when oil is thrown out of the breather pipes, subsequent engine failures have been reported, due to insufficient lubrication.

The Power Plant Laboratory of the Materiel Division has investigated and studied this subject quite thoroughly by conducting bench tests and multicylinder engine tests in an effort to solve the problem.

The bench test was performed by mounting an aircraft engine oil pump on a test stand and driving it with an electric dynamometer, using equipment for measuring oil flow through the pump. Altitude conditions were simulated by means of vacuum attachments to the pump.

This type of test is very effective in studying the operating characteristics of the pump alone. However, when the pump is installed on an engine there are restrictions to oil flow which are not encountered in a bench test. In order to reproduce actual airplane installation conditions, as far as possible, a multicylinder engine test was made.

After the engine was installed on the test stand, oil was admitted to the engine until it flowed from the breather outlets. Under these conditions the test was started, observations made, and conclusions drawn.

From these experimental tests, and observations of actual conditions in airplane installations, it was found that there was decided similarity in many instances under both conditions of observation. From these observations and tests it has been possible to conclude that the oil scavenge capacities of engines in which this difficulty occurred are not great enough and require oil scavenge pumps with greater capacities, as it has been shown that successful operation of an oil pump can be had only when the minimum capacity of the scavenging side of the pump is greater than the maximum flow of the pressure side for any given speed, temperature, pressure and altitude.

Although steps have been taken to remedy the above-mentioned difficulties, Air Corps personnel may experience trouble until the physical changes have actually been made.

---oOo---

N.A.C.A. SUBCOMMITTEES AT WRIGHT FIELD

The Power Plant Laboratory of the Experimental Engineering Section at Wright Field, Dayton, Ohio, was the scene of two National Advisory Committee for Aeronautics subcommittee meetings recently.

On December 11th, the N.A.C.A. subcommittee on exhaust gas turbines and intercoolers convened with the following in attendance:

Ralph Birmann, representative of the Turbo Engine Corp.; K.A. Browne, Wright Aeronautical Corporation; S. Paul Johnson, N.A.C.A., Washington, D.C.; John G. Lee, United Aircraft Corporation; Charles Morris, General Electric; Lieut. C.J. Pfingstag, U.S.N. Bureau of Aeronautics; Benj. Pinkel, Langley Memorial Aero Laboratory; W.J. King, General Electric; Robert E. Lyttell, N.A.C.A.; and Opie Chenoweth and A.L. Berger, Power Plant Laboratory.

On the following day, members of the subcommittee on supercharger compressors attending the meeting on December 12th included:

Dr. G.W. Lewis, N.A.C.A.; Val Kronstedt and R.S. Buck, Pratt & Whitney; Kenneth Campbell, Wright Aeronautical Corp.; A.J. Larrecq, Allison Engine Division, General Motors; Oscar W. Schey, Langley Memorial Laboratory; Chester Smith, General Electric; Lieut. Commander S.B. Spangler, U.S.N. Bureau of Aeronautics; and Opie Chenoweth, Power Plant Laboratory.

---oOo---

AIRLINE ENGINEERS VISIT WRIGHT FIELD

The maintenance committee of the Air Transport Association of America was greeted by Lieut. Colonel John Y.York, Jr., Adjutant, Wright Field, Ohio, when it visited there on December 11th as guests of Major Howard H. Couch and Captains Edward M. Gavin and Daniel F. Callahan, Wright Field officers, who are

(Continued on Page 21)

Gulf Coast Air Corps Training Center

The largest class of Flying Cadets ever to graduate from the Air Corps Advanced Flying School, Kelly Field, Texas, received their commissions and wings on December 20, 1940, at the Post Theater in the new standard streamlined graduation exercises.

The meeting was called to order at 9:00 o'clock. Colonel Hubert R. Harmon, Commanding Officer, addressed the class, welcoming them as officers and charging them with the responsibility of upholding the fine traditions of the service.

Of the total of 270 graduates, 125 will remain at Kelly Field to take the advanced instructors' course and, upon completion thereof, will be assigned to the various fields now about ready to be activated. The other 145 graduates will be assigned to tactical units for specialized training and service.

"Kelly Field can well be called the daddy of the U.S. Army Air Corps," says the News Letter Correspondent. "Every one of the new schools will have former student flyers of this post as instructors. Out of each of the classes graduated in the latter part of 1940, a hundred or more have been held for instructors' training."

Southeast Air Corps Training Center

Basic Flying School, Montgomery, Ala.

Class SE 41-C reported for duty on November 26th, and is the first class to report to the Air Corps Basic Flying School being built around the Municipal Airport at Montgomery, Ala. Not all barracks were completed, but the Flying Cadets dug in and have created a soldierly atmosphere amid surroundings which are still in the construction stage. The class immediately assumed its responsibility in creating customs, traditions and standards to pass on to the many classes to come, an attitude all the more commendable in the absence of an upper class.

Arriving on Tuesday, the class commenced its flying on Thursday, after an intensive period of military indoctrination. Flying has continued hours ahead of schedule, and the Flying Cadets were looking forward to a few days' Christmas leave.

The Flying Cadets have a new Social Headquarters in a large club room recently constructed in the Jefferson Davis Hotel, Montgomery, Ala. The Social Clubroom is decorated in the aviation motif, attractively furnished, is exclusive to Flying Cadets and is controlled entirely by themselves. At its formal opening on Saturday, December 14th, Colonel Floyd E. Galloway, Commandant of the Air Corps Advanced Flying School, and Lieut. Colonel Aubrey Hornsby, Commandant of the Air Corps Basic Flying School, joined in congratulating the members of the Flying Cadet Social Committee, headed by Flying Cadet First Captain J.P.C. Robinson, on the noteworthy achievement.

In all departments, the Class SE 41-C has set high military flying, academic and social standards for the classes which will follow.

Advanced Flying School, Maxwell Field.

Colonel Floyd E. Galloway, Commandant of the Advanced Flying School, Maxwell Field, Ala., recently stated that the graduation date for the 104 students of Class SE-41-A tentatively had been advanced from January 30th to January 18th. He added that the graduation of the students - the first to enroll in the Southeast Air Corps Training Center- was predicated on completion of the course but that, unless unusually bad flying weather prevailed in the next three weeks, he believed the first classmen would receive their "Wings" two weeks ahead of schedule.

The Southeast Air Corps Training Center authorities are already perfecting arrangements for the occasion and hope to make it a gala affair. The graduation will be the first held at Maxwell Field since last July, when it was converted from an Air Corps Tactical School. The program will include an address by a ranking officer of the Air Corps, the presentation of "Wings," diplomas and commissions in the U.S. Army Air Corps Reserve.

All save two of the 102 Flying Cadets are eligible for commissions as second lieutenants in the Air Reserve. The two excepted Cadets are below the prescribed age of 21, and they will remain at Maxwell Field - one until January 29th and the other until February 17th, when they will reach the age of 21, and they will then be commissioned.

Two members of the class, who are officers in the Regular Army - Captain Stanley T. Wray, Corps of Engineers, and Lieut. John W. Watt, Jr., Field Artillery, are to be transferred to the Air Corps in their respective grades.

Just recently the students began their fifth week of training and, following several days of inactivity caused by low clouds and rainy weather, again took to the air. While grounded

by weather conditions the students concentrated on ground school activities.

Along the middle of December the Cadets at the Advanced Flying School were scheduled to begin six-plane formation flying in addition to continuing the three-plane formations inaugurated ten days previously, as well as participating in night cross-country flights, radio code practice and attending lectures on Pursuit Aviation, squadron duties of junior officers and military training.

Cadets at the Basic Flying School, commanded by Lieut. Colonel Aubrey Hornsby, are also ahead of schedule. This School expects to enroll its fourth class of Cadets and student officers about January 1, 1940.

Six more Basic Training airplanes recently arrived at the Municipal Airport, Montgomery, Ala., piloted by officers who ferried them from the Vultee Aircraft Factory at Los Angeles, Calif. Captains George Schlatter and Robert E.L. Choate were in charge of the pilot detail.

Beginning their cross-country and night flying missions, students at the Advanced Flying School, Maxwell Field, are making their cross-country flights to Troy; Dothan; Eufaula; Lawson Field, Ga.; Wetumpka and back to Maxwell Field, with Lawson Field as the only landing point on the itinerary. These flights are made in three-ship formations with rotating leadership. Night flying is local, conducted from 1730 hours to 24 hours (5:30 p.m. to 12:00 midnight) from Tuesday to Friday, inclusive. Basic combat training planes, known as BC-1A's, are used on the cross-country and night flying missions. This class commenced training at the Advanced School on November 16th.

A recent announcement by Colonel Galloway was to the effect that 32 additional flying instructors were to be detailed to Maxwell Field for Class SE 41-B, scheduled to commence about December 28th. The new flying instructors arriving from the Gulf Coast Air Corps Training Center, all of them second lieutenants in the Air Reserve, are listed below, viz:

O.R. Berney, Jr., M.E. Beveridge, E.J. Beth, F.W. Caton, L.O. Christman, V.M. Cloyd, Jr., G.C. Darby, Jr., C.C.Fowler, A.E. Forsman, W.R. George, A.F. Gordon, W.L. Hall, W.A. Hardesty, K.K. Howenstine, W.A. Herrman, F.G. Jones, J. Kokolus, R.H. Larson, S.R. McDaniell, Jr., W.A. McWhorter, M.A. Miller, D.L. Morris, D.J. Nolan, S.K. Oliver, R.L. Randolph, H.H. Richardson, R.A. Smith, J.J. Surowiec, E.L. Van Allen, R.B. Whitley, II, J.W. Wright and L.J. Wright.

Captain Burton M. Hovey, Assistant Commandant and Director of Training, stated that Class SE 41-B would consist of 32 Regular Army student officers and 132 Flying Cadets.

Specialized Flying School, Selma, Ala.

The transfer of about 700 officers and men from Maxwell Field, Ala., to the Specialized Flying School at Selma, Ala., was accomplished along about the middle of December, the men being transported by motor convoy.

Units moved to the Specialized School were the 90th and 92nd School Squadrons and the 67th Air Base Group, less the Second Materiel Squadron. Most of these men have been in training at Maxwell Field for the last few months.

Bombardier and Pursuit training will be given at the Air Corps Specialized Flying School at Selma, which is one of several large units under the jurisdiction of the Southeast Air Corps Training Center, Maxwell Field.

FROM PRIVATE TO "TOP KICK" IN TEN MONTHS

Lawrence B. Halter enlisted in the Army at Canton, Ohio, on January 17, 1940. Prior to enlisting, he had been employed in a storage battery plant and was making a very excellent salary. Halter, however, believed that the Army offered a pretty good career to a fellow who really wants to go places, so he joined up. He was sent to Langley Field, Va., and on May 6, 1940, after five months of service, he was made a Corporal. Three months later, on August 27th, he was made a Sergeant. On September 21st, he was transferred to Mitchel Field, N.Y., and on October 4th was made a First Sergeant.

From buck private to first sergeant in ten months — not bad for a 20-year old boy!

---oOo---

Airline Engineers Visit Wright Field

(Continued from Page 19)

honorary members of the Association.

Accompanying Mr. F.W. Barker, Secretary of the Association and chairman of the maintenance committee, were Messrs. R.L. Anderson, Chicago and Southern Airlines; R.O. Jacobs, Pan-American; J.S. Hibbert, United Airlines; J.F. Martin, American Airlines; K.O. Larson, Northwest Airlines; H.F. Salisbury, United Airlines; and H.B. Taylor, Civil Aeronautics Authority.

---oOo---

Lieut. Col. Idwal H. Edwards was relieved as a member of the General Staff, War Department, and assigned to duty at Randolph Field, Texas.

V-8680, A.C.

HEROIC WORK BY MEDICAL OFFICER IN CRASH

Hamilton Field, Calif., lost its "Duck" in December when, during the course of a routine training flight, the OA-9 stationed at that field for rescue work, plunged into Clear Lake, 60 miles east of the base, and was completely wrecked.

No critical injuries were suffered by occupants of the Amphibian, although 1st Lieuts. Charles L. Hamilton and Arthur V. Jones, pilot and co-pilot, respectively, were hospitalized for two weeks as a result of being thrown through the front of the airplane, and the remainder of the crew, consisting of one Medical officer and three enlisted men, were considerably shaken up and suffered minor injuries and shock.

Captain John M. Talbot, Medical Corps, performed heroic work in assisting in the rescue of the dazed crew and helping them to hang on to the half submerged Amphibian until rescue craft arrived from the shore an hour later. All passengers agreed that Corporal Joe H. Dooling, crew chief, owes his life to Captain Talbot. Rendered unconscious in the crash, Corporal Dooling was dragged into the flooded pilot's compartment and pushed clear with great difficulty by the Medical officer, who then brought him to the surface and assisted him in retaining his precarious hold on the wing until the crew chief regained his faculties. That done, Captain Talbot turned his attention to Lieut. Hamilton, who was bleeding profusely from a cut on his wrist. A tourniquet was improvised from a necktie and applied under extremely difficult conditions while the men struggled in the water. Captain Talbot then rendered what first-aid he could under the circumstances.

When the group was finally rescued by boats and removed to an isolated farmhouse on the lake shore, Captain Talbot continued to provide medical aid until assistance could be brought from the outside.

Lieuts. Hamilton and Jones, in addition to praising Captain Talbot's heroic work in this accident, pointed to it as an outstanding testimony of the desirability of having Medical personnel present during cross-country flights in multi-engined aircraft.

---oOo---

Lieut. Colonels, Air Corps, Harold M. McClelland (General Staff Corps), Wolcott P. Hayes, Edmund W. Hill and Walter F. Kraus were promoted to Colonel (Temporary) with rank from November 16, 1940.

LIFE NOW IN THE ARMY SOMEWHAT DIFFERENT

By the McChord Field Correspondent

Tradition, tall stories and imagination all work together to play their part in painting a picture of army life for the prospective recruit. Every "rookie" comes into the Army with preconceived notions of early morning bugle calls, mass formations, close order drill, mountains of spuds to peel, uniforms too large or too small, hard-boiled sergeants, pay day and wild Saturday nights.

Imagine the surprise of the McChord Field recruit when he discovers there are no bugle calls. No leather lunged "windjammer" splits the early morning air with dream-shattering "Ta-Tas" or lulls you to sleep at 10:00 p.m. with the nostalgic "Taps." Instead, some sergeant is apt to breeze into the squadroom at 6:00 a.m., toot on a whistle and chirp merrily: "Daylight in the swamp, boys! Hit the deck - there's lots to do today!"

Comforting thought.

No loafing in the squadroom till all hours of the night, either. You are right in the midst of a good game with prospects of an ace-high straight when suddenly the quiet of the evening is shattered with: "Lights out: Nine o'clock, men!"

You wonder what has happened to those all night sessions the oldtimers back home used to tell about.

The mess hall is another never-ending source of wonderment to the "rookie." What has happened to the old company mess hall line-up and the familiar mess kit that Uncle John used in the fracas 23 years ago? Here at McChord he uses sectional, one-piece trays; he goes up to modern steam tables and selects his food from a large assortment.

He gets a turn at K.P. Potato peeling is a cinch with the new electric peelers. Dish washing has lost many of its distasteful features. Gone are the old sinks and the "in-the-suds-up-to-the-elbow 'pearl-diving.'" Mechanized dish washers put through the dishes for three thousand men in a hurry.

Electric waxers shine up the hall and squadroom floors in a jiffy, and other labor-saving, economical devices are seen all about the post.

The new recruit soon learns that men are in the Air Corps to perfect a national defense unit second to none. They are not in the Army to perform menial tasks, and the latter are performed as quickly as modern equipment is able to do the job.

The "knock-em-down and drag 'em out and stack 'em up" sergeant who served as a topic of conversation for so many

(Continued on Page 23)

BRAZILIAN STAFF OFFICERS VISIT RANDOLPH

Randolph Field, Texas, was the first stop on a nation wide tour of the United States by Brigadier General Amaro Soares Bittencourt, first Assistant Chief of Staff of the Brazilian Army, and his aid, Lieut. Colonel Stenio Caio de Albuquerque Lima.

Arriving by motor car in San Antonio after attending the recent Presidential inauguration in Mexico City, the two South American officers were met by Brigadier General John B. Brooks, Commanding General of Randolph Field, and a guard of honor furnished by Headquarters and Headquarters Squadron.

The day was spent on a comprehensive tour of the "West Point of the Air," the mass training of future pilots for the Air Corps attracting the attention of the visiting dignitaries. An informal reception was held later in the afternoon. General Bittencourt commented on the display of the national flag of Brazil, which appeared in the color guard alongside the Stars and Stripes.

---oOo---

SHORT CIRCUIT BETWEEN THE EARPHONES

Class 41-B was still in its infancy at Randolph Field at the time. Cadet Horace Palmer, former gridiron ace from the University of North Carolina, had just joined the ranks of the solo flyers. Now our Cadet had quickly mastered the other gadgets in the big cockpit, but for some while the radio remained a mystery. Palmer would connect his earphones, turn a few switches and listen expectantly. If he heard a voice he would assume he had a direct connection with DR-2, and in his best English would demand "Who dat?" DR-2, at first, not knowing from whence came the silvery voice, remained silent. However, soon another conversation would come over the waves to the ears of the waiting Cadet. Still suffering under the same delusion, the former Tarheel would say, "Who dat?" At last grasping the situation, DR-2, who is not without humor himself, replied, "Who dat?"

Disgusted, but somewhat patient, Palmer again directed, "Who dat?" His only reply was another interrogation from DR-2 with the same phrase, "Who dat?"

At last Mr. Palmer could wait no longer and impatiently blasted into the mike, "Who dat who say Who dat every time I say Who Dat?"

---oOo---

Orders assigning Lt. Col. Arthur B. McDaniel, Office Chief of Air Corps, to duty as Chief of Staff, N.W. Air Dist., Ft. Geo Wright, Wash., were revoked.

MY LAST FLIGHT AT RANDOLPH
By Flying Cadet "I.M. Raunchy"

Look at that guy! Thinks he will take off ahead of me! I'll show him; I'll take off in front of him! Wow! That was close, but I beat him! Oh, oh! A little cross T, but I guess nobody saw me.

Gee, but this plane climbs a lot better at 70 m.p.h. Now watch me go out of traffic just like my instructor. Wonder what area we fly in today? Oh, well; I'll just play safe and get out over the mesquite. Darn, but these clouds are low; but what the heck? Didn't I pass my instrument check the other day? I'll make my own holes. Must be fog in the cockpit. I didn't see the instruments. Well, I finally got through, and I bet my instructor couldn't do any better himself.

Boy! Not a plane in sight! Guess I'll try a double snap. Well, it wasn't so bad; I only lost 2,000'. Might as well climb back up again with an Immelmann....These ships won't do an Immelmann worth a whoop; bet this baby will really wind up in a power dive. Wow! 250 - 260 - 270 - getting pretty fast, better pull out! Funny, sure is getting dark in here; can't see a thing. Guess that is what my instructor told me was a blackout. Wonder where I am? I don't seem to recognize any of this country. Wonder if that town to the west is New Braunfels? I'll buzz down over the railroad station and catch the name. Boy! Look at those folks run!

Guess I hit that right on the nose - better hurry back to Randolph, for my hour is about up. Wonder if that ship, number 520, wants to dog fight? He seems to be following me around...say; that ship is dual! I'd better get the*** out of here! Wonder if he saw me hop over that fence back there?

Well, back at last. Let's see - what time did I take off? Oh, well; I'll put down two o'clock.

"Raunchy, I.M., checking in."

"What's that you said?"

"Report to the Stage Commander?"

"Now...I wonder what he wants?"

---oOo---

Life in the Army Today (From Page 22)

"vets" chin fests must have been like Paul Bunyan's imaginary characters or as the neighbor's six-year old remarked about Aunt Sofia's canary that served as a morsel for a marauding cat - "he's become extincted."

The Air Corps is democratic. The officers and men go about their respective tasks with quiet efficiency.

V-8680, A.C.